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(54) **THREE DIMENSIONAL USER INTERFACE EFFECTS ON A DISPLAY**

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(57) **ABSTRACT**

The techniques disclosed herein may use various sensors to infer a frame of reference for a hand-held device. In fact, with various inertial clues from accelerometer, gyrometer, and other instruments that report their states in real time, it is possible to track a Frenet frame of the device in real time to provide an instantaneous (or continuous) 3D frame-of-reference. In addition to—or in place of—calculating this instantaneous (or continuous) frame of reference, the position of a user's head may either be inferred or calculated directly by using one or more of a device's optical sensors, e.g., an optical camera, infrared camera, laser, etc. With knowledge of the 3D frame-of-reference for the display and/or knowledge of the position of the user's head, more realistic virtual 3D depictions of the graphical objects on the device's display may be created—and interacted with—by the user.